

Remarks

Claims 1-10 and 12-14 are pending.

Claims 1-5 and 9 are amended.

Claims 6 and 8 are original.

Claims 7, 10 and 12-14 are as previously presented.

Claims 1-3 and 5 are amended to number the structures appearing therein, support is found in the original claims.

Claims 1, 2 and 5 are further amended to insert the phrase "which pigment has a particle size of less than or equal to 0.1 μ m" into line 2 immediately following the term "one blue-tinged red shade diketopyrrolopyrrole pigment (DPP pigment)" or the term "one blue-tinged red shade diketopyrrolopyrrole pigment", replacing the following word "having" with "has" and inserting the phrase "and consists of compounds" immediately prior to "of formula". Support is found on page 1 line 22 of the specification.

Claim 4 is amended to insert the phrase "to result in a suspension followed by discharging the suspension into a mixture comprising methanol and acetic acid at a temperature below 30°C" at the end of the claim. Support can be found in the working examples, for example, on page 17 lines 9-12 of the specification.

Claim 9 is amended to delete a spurious occurrence of the word "either".

No new matter is added.

Claim Rejections

Claims 6, 7 and 13 are rejected under 35 USC 112, second paragraph for lacking proper antecedence for the term "formula 1a". Claim 5 is amended to label the structure corresponding to formula 1a. As all three claims ultimately depend from claim 5, Applicants respectfully suggest that the rejections are addressed and overcome and kindly ask that they be withdrawn.

Claim 9 is rejected under 35 USC 112, second paragraph for having a spurious occurrence of the word "either". The word has been deleted. Applicants respectfully suggest that the rejections are addressed and overcome and kindly ask that they be withdrawn.

Claim 4 is rejected under 35 USC 102(b) as anticipated by Rochet US 4,597,949.

Applicants respectfully traverse the rejections.

It is true that the process of claim 4 is analogous to that of US 4,597,949 as stated on page 7 of the instant specification, however the process is not the same and the differences are significant. To better highlight the differences, Applicants have amended claim 4 to include the further limitation that the suspension resulting after addition of the succinic acid diester is discharged into a mixture comprising methanol and acetic acid at a temperature below 30°C.

US 4,597,949 teaches discharging the reaction mixture into a hydrolysis medium at temperatures below 80°C (column 7 / lines 29-31). Hydrolysis takes place slowly without preliminary precipitation. The only description of the hydrolysis medium is that water, alcohols or acids can be used (column 6 / lines 16-19). In the examples of '949, hydrolysis is always performed by slow addition of methanol followed by acetic acid at 65°C (examples 1-46) or a methanol/acetic acid mixture at 60°C (examples 47 - 51).

The difference between the two processes is related to the small particle size of the pigment as related in the amendments to claim 2 from which claim 4 depends.

In light of the amendments and discussion above, Applicants respectfully suggest that the 35 USC 102(b) rejections of claim 4 over Rochet US 4,597,949 are addressed and overcome and kindly ask that the rejections be withdrawn.

Claims 1-3 and 5-8 are rejected under 35 USC 102(b) as being anticipated by Wallquist, et.al., US Pat 5,738,719 or Rochet US Pat 4,597,949 which disclose polymeric compositions containing diketopyrrolopyrrole pigments with chemical formulae corresponding to those of the instant invention.

Applicants respectfully traverse these rejections.

Applicants respectfully contend that, especially in light of the instant amendments, that real differences exist between the instant pigments and those of the cited art.

First, to address an issue raised by the Examiner, the phrase "blue-tinged red shade" standing alone would indeed seem relative. The limitation a transmission at 570-580 nm of less than 5% and a transmission at 615 nm of at least 80% describes the physical characteristic that is responsible for the bluish shade. Applicants have left both phrases in the claims for the time being as it is not always obvious what the effect of the transmission limitations would be on the color of the pigments.

The claims have also been amended to describe a pigment that has a particular particle size, i.e., less than or equal to 0.1 μm , and a more specific chemical makeup, i.e., consisting of compounds of formula (1).

Applicants note that neither of the cited references discloses this particle size, nor does either reference disclose the blue shade, as defined by the transmission limitations, of the instant pigments. Applicants respectfully argue that it is known that the chemical formula of pigment components is only a part of what determines the observed color. Unlike dyes, pigment particles or crystals do not dissolve upon incorporation and the crystal form, the particle size, and the range of particle sizes present contribute significantly to the color. It is Applicants position that the pigments of the instant invention have these coloristic properties at least in part due to the particle size and the manner in which the pigment particles are prepared as described in instantly amended claim 4 and the discussion above.

Further, US Pat 5,738,719 discloses pigments that necessarily comprise 0.2-20 mol% of a diketopyrrolopyrrole in which one of R_6 and R_7 is hydrogen and the other is $-\text{CN}$. Such a compound does not fit instant formula (1). Hence, there is a clear difference between the instant invention, wherein the pigment consists of compounds of formula (1). While further pigments may be present as separate particles in, for example the composition of claim 1, the pigments as described in the instantly amended claims consist only of compounds of formula 1.

Applicants therefore conclude that the instant pigments differ from those of the cited art in at least particle size and coloristic properties and in the case of US Pat 5,738,719, chemical composition. The Examples of US Pat 4,597,949 are listed as being red, reddish, reddish violet,

violet, claret, orange or orange yellow so that one would not be directed to the instantly claimed "blue-tinged red shade" diketopyrrolopyrrole pigment "having a transmission at 570-580 nm of less than 5% and a transmission at 615 nm of at least 80%" by the art.

In light of the amendments and discussion above, Applicants respectfully suggest that the 35 USC 102(b) rejections of claims 1-3 and 5-8 over Wallquist, et.al., US Pat 5,738,719 or Rochet US Pat 4,597,949 are addressed and are overcome and kindly ask that the rejections be withdrawn.

Claim 9 is rejected under 35 USC 102(b) as anticipated by Rochet US 4,597,949.

In light of the discussion above, Applicants respectfully traverse the rejections as the pigments of US 4,597,949 have neither the small particle size nor specific coloristic properties of the instant pigments which are required for color filters. Applicants therefore kindly ask that the rejections be withdrawn.

Claims 12 and 14 are rejected under 35 USC 103(a) as obvious over Wallquist, US Pat 5,738,719 or Rochet US 4,597,949 in view of WO 02/10288 which teaches DPPs in color filters.

Applicants respectfully traverse the rejections.

As disclosed in the specification (see for example the end of page 2), color filters have specific requirements that are not met by existing DPPs. The very steep increase in transmission at about 600 nm of the instant pigments as seen in Figure 1 allows the instant pigments to fulfill these requirements. Applicants respectfully aver that these transmission characteristics could not be expected from pigments of the prior art and that these valuable pigments, and the filters made with them, are only available due to the instant invention.

Applicants therefore suggest that the rejections under 35 USC 103(a) over Wallquist, US Pat 5,738,719 or Rochet US 4,597,949 in view of WO 02/10288 are addressed and overcome and kindly ask that the rejections be withdrawn.

Pigments are defined by more than chemical formula. The properties of pigments, including such elements as hue, depth of color, stability, transparency, etc., are affected to a large degree by the physical shape, size, crystal form, degree of aggregation and other physical characteristics of the pigment crystal or particle which may result from the exact process by which they are prepared, isolated and conditioned. A change in these physical characteristics results in a different pigment with different properties even if the chemical formula of the pigment molecule remains the same.

Applicants respectfully suggest that the amendments above make clear that the DPP pigments of the instant claims are those pigments that as a result of their fine particle size have specific, highly desirable and previously unavailable hue and transmission properties.

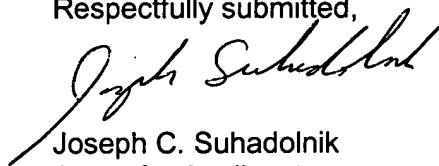
In light of the above amendments and discussion, Applicants respectfully submit that all the rejections are addressed and are overcome. The Examiner is therefore respectfully requested to withdraw the rejections and find claims 1-10 and 12-14 allowable.

In the event that minor amendments will further prosecution, Applicants request that the examiner contact the undersigned representative.

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